

Tellabs® 1600-712 Single Family Unit (SFU) GPON ONT

Superior service delivery with a single cost-effective easy-to-install GPON ONT

Overview

The Tellabs® 1600-712 Gigabit Passive Optical Network (GPON) Optical Network Terminal (ONT) supports residential voice, high-speed data, Internet Protocol Television (IPTV), Multimedia over Coax Alliance (MoCA) and Cable Television (CATV) services all over a single optical fiber in one cost-effective, easy-to-install unit for indoor and outdoor applications.

Features

- ITU-G.984 compliant with GPON Encapsulation Method (GEM)
- Supports 2.488 Gbps/1.244 Gbps asymmetrically on the PON
- Utilizes the 1490 nm wavelength for downstream PON traffic from the (OLT) and 1310 nm wavelength for upstream traffic to the OLT
- Optional environmentally hardened enclosure
- NEBS-3 compliant
- Install either indoors or outdoors
- Powered by a 12 V DC power adaptor and supports battery backup

Support

Voice Support

The Tellabs® 1600-712 GPON ONT includes two POTS ports for carrier-grade voice services. The POTS ports:

- Support SIP-based VoIP POTS services
- Provide all SLIC, CODEC, DTMF and dial-pulse detection/decoding functions needed for a complete analog telephone service
- Support FSK Caller ID generation
- Provide MWI functions for visual and audible alerts
- Provide balanced five REN ringing
- Support DTMF generation and decoding, tone generation and modem/fax tone detection
- Support GR-909/enhanced metallic loop test functionality
- Draw/Break Dial Tone Test

The POTS ports perform all battery, over voltage, ringing, supervision, CODEC, hybrid and test (BORSCHT) functions. The internal line-feed circuitry provides:

- Reverse battery operation
- Loop-start operation
- On-hook transmission

High-Speed Data Support

The Tellabs 1600-712 GPON ONT supports either one 10/100/1000BaseT Ethernet or one MoCA interface for high-speed data communication in the home. Typical home configurations involve communication from the ONT to a home router via either CAT-5 Ethernet cable or in the case of MoCA, the existing in-home RG-6/RG-59 coaxial cable. Operator provisioning provides easy flexibility in determining which of the two interfaces is active. The Ethernet interface operates as an IEEE 802.1d transparent bridge based on RFC-2684. Class of service as well as bandwidth is controlled through provider provisionable options. The Ethernet and MoCA ports both support streaming IP video and IPTV content delivery and meet ITU 802.1p QoS standards at the MAC level.

CATV Support

The Tellabs 1600-712 GPON ONT provides a 54–870 MHz CATV AM-VSB service over the 1550 nm optical wavelength on the PON in compliance with the G.983.2/G.984.4 standard. The CATV service can handle a variety of digital and analog channels. The ONT functions as an addressable tap on the cable plant and can be enabled or disabled remotely to control CATV theft. CATV supports an 18 dBmV Automatic Gain Control (AGC) circuit for consistent output levels.



Figure 1. The Tellabs® 1600-712 GPON ONT

Management

The Tellabs 1600-712 GPON ONT supports management via the ITU G.983.2/G.984.4 OMCI interface to a Tellabs Optical Line Terminal (OLT). Deployed with a Tellabs OLT, the Tellabs 1600-712 GPON ONT can be managed by the Tellabs® 1090 Network Management System or the Tellabs® 1191 Network Management System.*

General Specifications

- ITU-T G.984.1 — GPON General Characteristics
- ITU-T G.984.2 — GPON Physical Media Dependent (PMD) Layer Specifications
- ITU-T G.984.3 — GPON Transmission Convergence Layer Specifications — GEM MAC Layer
- ITU-T G.984.4 — GPON ONT Management and Control Interface (OMCI) Specifications
- RFC 3261, RFC 3265, RFC 3325 (SIP)
- RFC 768 (UDP)
- RFC 793 (TCP)
- RFC 2833, RFC 3550, RFC 3551 (RTP)
- RFC 3264 (SDP)

Network Interfaces

- Downstream — 2.488 Gbps @ 1490 nm received optical power levels -8 to -28 dBm
- Upstream — 1.244 Gbps @ 1310 nm transmitted optical power levels 0 to +4 dBm
- Video — AM-VSB Cable Video Distribution @ 1550 nm received optical power levels, +1 dBm to -5 dBm
- OptiTap or SC/APC

Subscriber Interfaces

- Two RJ-11T and Insulation Displacement Connectors (IDC) ports for voice connections
- One RJ-45 port for Ethernet
- One type F coaxial connector for RF video including MoCA to deliver high-speed data and set-top return path over coax
- Optional primary lightning protection with standard gas tube modules supported

POTS Voice Specifications

- Two POTS ports
- Performs all BORSCHT functions
- Up to five REN per line
- Supports loop lengths up to 500 ft
- Loop-start operation with modem/fax tone detection
- DTMF and dial pulse generation/decoding
- Dual tone generators
- A-Law*/ μ -Law, linear PCM companding
- CODEC auto-detection for G.711 and G.729 (a+b)* with SIP
- T.38 fax support
- GR-909/enhanced metallic loop test functionality
- Draw and Break Dial Tone (DBDT)
- FSK caller ID generation
- Audible/visual MWI indicator support
- SIP-based VoIP

Data Specifications

- 10/100/1000BaseT auto sensing support with MDIX
- 100 m cable length
- Transparent bridging
- Switched Digital Video (SDV)
- Internet Group Multicast Protocol (IGMP)*
- Internet Protocol Television (IPTV)*

Video Port Specifications

- 75 Ohm type F coaxial connector
- RF output level: 18 dBmV / channel supports up to eight RF devices
- 54–870 Mhz forward path

Power Specifications

- 12 V DC 2.0 A max input
- Standard battery alarm telemetry support

Physical Specifications

- Tellabs 1600-712 GPON ONT electronics: 11 in x 11 in
- Optional outdoor enclosure: 13 in x 13 in x 3.5 in with integral 60 ft fiber slack storage
- Total combined weight: 6.25 lbs

* Future release

Slack Storage Unit

- 60 ft storage
- ~1 in depth, 0 in added depth to enclosure
- Included with enclosure
- 13x13 enclosure
- Low profile - ~3.5 in deep with SSU
- Security screw
- Pad lock support
- Drop-in NID for easy installation and replacement

Environmental Specifications

- Temperature: -40° C to +46° C with solar loading

Certifications

- FCC Part 15 Subpart B, GR-1089, GR-63, GR-487



Figure 2. Features 60 ft. fiber slack storage



Figure 3. Optional outdoor enclosure

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